Title Shelf life of mangosteen (*Garcinia mangostana* L.) fruit as influenced by 1-methylcyclopropene, treatment duration and maturity

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Citation Book of Abstracts, Southeast Asia Symposium Quality and Safety of Fresh and Fresh Cut Produce Greater Mekong Subregion Conference on Postharvest Quality Management in Chains, August 3-5, 2009, Radisson Hotel, Bangkok, Thailand.

Keyword mangoteen; 1-MCP; maturity

Abstract

A shelf life improvement of up to 74% in ambient condition and the lower weight loss of 7.6% at 15 days after treatment (DAT) were shown by reddish purple mangosteen fruit treated with 1000 nL L^{-1} 1 methylcyclopropene (1-MCP) for 4 h. Treated fruit reached the respiratory peak two days later than the control fruit. Browning and shriveling of the sepals (rating of 2) as well as pericarp hardening (rating of 2) were delayed by 6 and 9 days, respectively, resulting in a decay in disease occurrence and longer shelf life. Ion leakage was 12.2% lower than treated fruit at 15 DAT. Using two fruit maturity stages such as light purple with green streaks (M1) and reddish purple (M2) fruit at two 1-MCP concentrations (1000 and 1500 nL L^{-1}) and three treatment duration (0, 4, 6 h); the change in peel color, visual quality and pericarp firmness were slower in treated fruit. Peel color change (to PCI 7, black brown) of M1 and M2 fruit were extended up to 6 and 4 days, respectively. Visual quality rating of 4 was reached by untreated M1 fruit in 9 days while this was reached by treated fruit in 17 days. Treated M2 fruit reached this visual quality 4 days later than the control. The onset of pericarp hardening was delayed by 6 and 4 days, respectively, in M1 and M2 fruit. Average shelf life was 38.5% longer (M2) and 74% longer (M1) at 1000 nL L^{-1} 1-MCP. Since the variation in postharvest responses did not significantly differ using a higher 1-MCP concentration and longer treatment duration it is recommended that 1000 nLL^{-1} 1-MCP for 4 h be the application rate for mangosteen fruit that is further held in ambient condition.